

Notice of Allowability

Application No.

09/882,439

Examiner

John Pezzlo

Applicant(s)

LI, SHUO-YEN ROBERT

Art Unit

2662

-- Th MAILING DATE of this communication app ars on th cover sh et with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to application filed 15 June 2001.
2. ☒ The allowed claim(s) is/are 1-22.
3. ☒ The drawings filed on 15 June 2001 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).
 - * Certified copies not received: _____.


Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).**
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date 6/15/05, 6/15/01
4. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413),
Paper No./Mail Date _____.
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.


JOHN PEZZLO
PRIMARY EXAMINER

DETAILED ACTION

EXAMINER'S AMENDMENT

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Louis Sickles II on 26 August 2005.

The claims have been amended as follows:

1. Claim 21, amended per attachment.
2. Claim 22, added per attachment.

Allowable Subject Matter

Claims 1-22 are allowable over the prior art of record.

Reasons for Allowance

Art Unit: 2662

The following is an examiner's statement of reasons for allowance: Applicant has claimed the following uniquely distinct features in the instant invention, which are not found in the prior art, either singularly or in combination:

1. Regarding claim 1 - An $m \times m$ switch having m input ports and m output ports to route m incoming signals, the switch arranged as an m -to- n concentrator, $n < m/2$, wherein $m-n$ of the m output ports are grouped into a O -output group while the remaining n output ports are grouped into a I -output group, and the m incoming signals are compared according to a predetermined order among all possible values of a signal and thus the largest n among the m incoming signals are routed to the I -output group while the remaining $m-n$ of the m incoming signals are routed to the O -output group, the concentrator comprising an $\lfloor m/2 \rfloor$ -to- n first concentrator/sorter to process $\lfloor m/2 \rfloor$ of the incoming signals wherein n of the $\lfloor m/2 \rfloor$ output ports are grouped into a first I -output group of the first concentrator/sorter and the largest n among the $\lfloor m/2 \rfloor$ incoming signals are routed to the first I -output group, an $\lceil m/2 \rceil$ -to- n second concentrator/sorter to process the remaining $\lceil m/2 \rceil$ of the incoming signals wherein n of the $\lceil m/2 \rceil$ output ports are grouped into a second I -output group of the second concentrator/sorter and the largest n among the $\lceil m/2 \rceil$ incoming signals are routed to the second I -output group, and n sorting cells wherein the k -th one of the sorting cells, $k = 1, 2, \dots, n$, has a first input port connected to a specific one of the output ports of the I -output group of the first concentrator/sorter to receive one signal from the specific output port of the first concentrator/sorter as the first one of the two input signals to the k -th sorting cell and a second input port connected to a specific one of the output ports of the I -output group of the second concentrator/sorter to receive one signal from the specific output port of the

Art Unit: 2662

second concentrator/sorter as the second one of the two input signals to the k-th sorting cell and the sorting cell compares the values of its two input signals and routes the one with the larger value to the lower one of its two output ports, and wherein the l-output group for the m-to-n concentrator comprises the lower output port of all n sorting cells.

2. Regarding claim 7 - An $m \times m$ switch having m input ports and m output ports, the switch arranged as an m-to-n concentrator, $n < m/2$, wherein m-n of the m output ports are grouped into a O-output group and the remaining n output ports are grouped into a l-output group, the concentrator comprising an $\lfloor m/2 \rfloor$ -to-n first concentrator/sorter wherein n of the $\lfloor m/2 \rfloor$ output ports are grouped into a l-output, an $\lceil m/2 \rceil$ -to-n second concentrator/sorter wherein n of the $\lceil m/2 \rceil$ output ports are grouped into a l-output group, and n sorting cells wherein each of the sorting cells has a first input port connected to a specific one of the output ports of the l-output group of the first concentrator/sorter and a second input port connected to a specific one of the output ports of the l-output group of the second concentrator/sorter and wherein the n lower output ports of the sorting cells form the l-output group for the concentrator.

3. Regarding claim 8 - An $m \times m$ switch having m input ports and m output ports to route m incoming signals, the switch arranged as an m-to-n concentrator, $n < m/2$, wherein m-n of the m output ports are grouped into a O-output group while the remaining n output ports are grouped into a l-output group, and the m incoming signals are compared according to a predetermined order among all possible values of a signal and thus the largest n among the m incoming signals are routed to the l-output group while the remaining m-n of the m incoming signals are routed to the O-output group, the concentrator comprising an $\lceil m/2 \rceil$ -to-n first concentrator/sorter to process $\lceil m/2 \rceil$ of the

Art Unit: 2662

incoming signals wherein n of the $\lceil m/2 \rceil$ output ports are grouped into a first l -output group of the first concentrator/sorter and the largest n among the $\lceil m/2 \rceil$ incoming signals are routed to the first l -output group, an $\lfloor m/2 \rfloor$ -to- n second concentrator/sorter to process the remaining $\lfloor m/2 \rfloor$ of the incoming signals wherein n of the $\lfloor m/2 \rfloor$ output ports are grouped into a second l -output group of the second concentrator/sorter and the largest n among the $\lfloor m/2 \rfloor$ incoming signals are routed to the second l -output group, and n sorting cells wherein the k -th one of the sorting cells, $k = 1, 2, \dots, n$, has a first input port connected to a specific one of the output ports of the l -output group of the first concentrator/sorter to receive one signal from the specific output port of the first concentrator/sorter as the first one of the two input signals to the k -th sorting cell and a second input port connected to a specific one of the output ports of the l -output group of the second concentrator/sorter to receive one signal from the specific output port of the second concentrator/sorter as the second one of the two input signals to the k -th sorting cell and the sorting cell compares the values of its two input signals and routes the one with the larger value to the lower one of its two output ports, and wherein the l -output group for the m -to- n concentrator comprises the lower output port of all n sorting cells.

4. Regarding claim 14 - An $m \times m$ switch having m input ports and m output ports, the switch arranged as an m -to- n concentrator, $n < m/2$, wherein $m-n$ of the m output ports are grouped into a 0 -output group and the remaining n output ports are grouped into a l -output group, the concentrator comprising an $\lceil m/2 \rceil$ -to- n first concentrator/sorter wherein n of the $\lceil m/2 \rceil$ output ports are grouped into a l -output, an $\lfloor m/2 \rfloor$ -to- n second concentrator/sorter wherein n of the $\lfloor m/2 \rfloor$ output ports are grouped into a l -output group,

Art Unit: 2662

and n sorting cells wherein each of the sorting cells has a first input port connected to a specific one of the output ports of the l -output group of the first concentrator/sorter and a second input port connected to a specific one of the output ports of the l -output group of the second concentrator/sorter and wherein the n lower output ports of the sorting cells form the l -output group for the concentrator.

5. Regarding claim 15 - A method for implementing an m -to- n concentrator, $n < m/2$, comprising configuring an $\lfloor m/2 \rfloor$ -to- n first concentrator/sorter having a l -output group, configuring an $\lceil m/2 \rceil$ -to- n second concentrator/sorter having a l -output group, and interconnecting the first concentrator/sorter and the second concentrator/sorter with n sorting cells wherein each of the sorting cells has a first input port connected to a specific one of the output ports of the l -output group of the first concentrator/sorter and a second input port connected to a specific one of the output ports of the l -output group of the second concentrator/sorter and wherein the n lower output ports of the n sorting cells form the l -output group for the concentrator.

6. Regarding claim 18 - A method for implementing an m -to- n concentrator, $n < m/2$, comprising configuring an $\lceil m/2 \rceil$ -to- n first concentrator/sorter having a l -output group, configuring an $\lfloor m/2 \rfloor$ -to- n second concentrator/sorter having a l -output group, and interconnecting the first concentrator/sorter and the second concentrator/sorter with n sorting cells wherein each of the sorting cells has a first input port connected to a specific one of the output ports of the l -output group of the first concentrator/sorter and a second input port connected to a specific one of the output ports of the l -output group of the second concentrator/sorter and wherein the n lower output ports of the n sorting cells form the l -output group for the concentrator.

Art Unit: 2662

The closest prior art, either singularly or in combination, fail to anticipate or render the above limitations obvious.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

Claims 1-22 being allowable, **Prosecution On The Merits Is Closed** in this application.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

1. Abu-Amara et al. (US 6,026,092) discloses a high performance fault tolerant switching system for multimedia satellite system and terrestrial communications networks.
2. Law (US 5,875,190) discloses an asynchronous transfer mode switching system.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John Pezzlo whose telephone number is (571) 272-3090. The examiner can normally be reached on Monday to Friday from 8:30 AM to 4:30 PM.

Art Unit: 2662

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hassan Kizou, can be reached on (571) 272-3088. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (571) 272-2600.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C.

or faxed to:

(571) 273-8300

For informal or draft communications, please label "PROPOSED" or "DRAFT"

Hand delivered responses should be brought to:

Jefferson Building


2A15

500 Dulany Street

Alexandria, VA, 22313.

John Pezzlo

29 August 2005


JOHN PEZZLO
PRIMARY EXAMINER